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RESEARCH

Ergonomic risk: social representations of dental students

Risco ergonômico: representações sociais de estudantes de odontologia

Riesgo ergonómico: representaciones sociales de los estudiantes de odontología

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ABSTRACT

Objective: To learn the social representations of ergonomic risk prepared by dental students. **Method:** This exploratory study, subsidized the Theory of Social Representations, with 64 dental students of an educational institution, by means of interviews. The data were processed in Alceste4.8 and lexical analysis done by the descending hierarchical classification. **Results:** In two categories: knowledge about exposure to ergonomic risk end attitude of students on preventing and treating injuries caused by repetitive motion. For students, the ergonomic risk is related to the attitude in the dental office. **Conclusion:** Prevention of ergonomic risk for dental students has not been incorporated as a set of necessary measures for their health and the patients, to prevent ergonomic hazards that can result in harm to the patient caused by work-related musculoskeletal disorder, which is reflected in a lower quality practice. **Descriptors:** Occupational risk, Dentistry, Social psychology.

RESUMO

Objetivo: Apreender as representações sociais do risco ergonômico elaboradas por estudantes de odontologia. **Método:** Pesquisa exploratória, subsidiada na Teoria das Representações Sociais, com 64 estudantes de odontologia de uma instituição de ensino, por meio de entrevista. Os dados foram processados no Alceste 4.8 e feito análise lexical pela classificação hierárquica descendente. **Resultados:** Apresentados em duas categorias: conhecimento sobre a exposição ao risco ergonômico e atitude dos estudantes para prevenir e tratar as lesões causadas por esforços repetitivos. Para os estudantes, o risco ergonômico tem relação com a postura adotada no consultório odontológico. **Conclusão:** A prevenção do risco ergonômico para os estudantes de odontologia ainda não foi incorporada como um conjunto de medidas necessárias para a sua saúde e do paciente, para prevenir os riscos ergonômicos, podendo resultar em prejuízos para o paciente causados pelo distúrbio osteomuscular relacionado ao trabalho, com reflexos para uma prática com menos qualidade. **Descritores:** Risco ocupacional, Odontologia, Psicologia social.

RESUMEN

Objetivos: Conocer las representaciones sociales de riesgo ergonómico realizado por estudiantes de odontología. **Método:** La investigación exploratoria, subsidiado en la Teoría de las Representaciones Sociales, con 64 estudiantes de odontología de una institución educativa, a través de entrevistas. Los datos fueron procesados en Alceste4.8 y análisis léxico realizado por la clasificación jerárquica descendente. **Resultados:** En dos categorías: el conocimiento acerca de la exposición al riesgo ergonómico y la actitud de los estudiantes para prevenir y tratar las lesiones causadas por movimientos repetitivos. Para los estudiantes, el riesgo ergonómico se relaciona con la actitud en el consultorio dental. **Conclusión**: La prevención de riesgos ergonómicos para estudiantes dentales no se ha incorporado como un conjunto de medidas necesarias para la salud y el paciente, para evitar riesgos ergonómicos que pueden resultar en daño al paciente causada por trastornos musculo-esqueléticos relacionados con el trabajo, que se refleja en una práctica con menos calidad. **Descriptores:** Riesgo ocupacional, Odontología, Psicología social.

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INTRODUCTION

The knowledge of students and professionals on the rules and risks to which they may be exposed, especially due to the fact that do not meet the necessary precautions and do not maintain a correct posture in the work environment, has contributed to increase the index of problems related to worker health, and may result in low quality service.

Risk is defined as a biological, physical or chemical condition that has the potential to cause damage to the worker, product or environment.[1]

Dentistry is an area of health that presents physical, chemical, biological, ergonomic risks for professionals and students, as well as for the patients. These risks, through accidents, can cause diseases to those who are more likely to acquire them, directly or indirectly.

Many professionals in the health and dentistry area have poor posture and few adopt biosecurity measures in the workplace during the procedures they perform which can cause harm to their health and the patient under their care.[2]

Thus, it becomes important to understand the influence of the cultural universe in decision making of the human being, in which the perception on the part of students and health professionals on the existing relationship between the occurrence of both occupational accidents as of cross infections, with the attitudes and behaviors adopted during the practice, it is essential for an improvement in the quality of care provided by them.

The importance of this study shows that from the research proposal of ergonomic risk, as a social phenomenon, by believing that in this perspective it will be possible to identify subjective aspects that certainly influence in the behaviors and attitudes of dental students.

This research was supported in the Social Representation Theory. This theoretical proposition is the result of permanent dialog between individuals and groups, which adapt and interact socially. [3] Social representation is the product of an activity for the appropriation of an external reality to thought and the psychological and social development of them, constituting a process by which establishes the relationship between content (information, images, opinions, attitudes) and an object from a participant (individual, family and community).[4]

In the work environment, it is clear that some adverse situations that make it difficult or impossible to implement biosecurity measures efficient both for the control of nosocomial infections as to the prevention of occupational accidents caused by inadequate posture of students and professionals, which can result in complications capable of interfering in their work.

This reality has led us to wonder about the level of attention that this issue has been receiving in the health area, especially on the part of dentistry students, seen that many professionals have not demonstrated concern with the issue by ignoring, or even by disregarding the ergonomic risks in their daily work, as empirically observed.

Based on this problem, it was defined as object of study for the Social Representations of Dental students of a private educational institution on ergonomic risk. Based on this situation where professionals and students seem not to conduct a proper practice in their daily lives, it puts in doubt their real knowledge on ergonomic risks, whereas it is a topic of great importance.

Thus, the study aims to apprehend the Social Representations of ergonomic risk prepared by the dentistry students.

METHODOLOGY

This is an exploratory study to analyze socio-cultural phenomena from the Social Representations on the ergonomic risk, subsidized in the Theory of Social Representations.

Upon verbal acceptance of the study participants were asked to sign the same as the term of free and informed consent, which meets the ethical and legal issues as the Ethics and Research - CEP / NOVAFAPI agreed with the requirements of Resolution 196 / 96, which deals with the guidelines and standards for research involving humans beings.[5]

The data generated were processed by Alceste 4.8 software, created in France, in the late 70's and permits performing automatically analysis of interviews, open questions of socioeconomic investigations, collection of various texts and aims at quantifying a text to extract the meaning of a stronger structure.

The ALCESTE software (Analyze des Lexemes Cooccurrents dans les Enonces d a Texte) was used in version 4.8 enables the lexical analysis by means of descending hierarchical classification (DHC), which uses the co-occurrence of words in the statements that constitute the discursive material. The *software* organizes the information considered most relevant, and which has as a reference in its methodological basis the conceptual logical approach and of lexical worlds.[7]

ALCESTE is a *software that analyzes* the material from the large Initial Context Units (ICUs), which can be interviews from different participants gathered in a corpus, responses and specific questions, normally open, questionnaires and text of text of journals and periodicals. The full text is formatted and divided into smaller segments called Elementary Context Units (ECUs) that correspond to the discursive material or writing referring to formation of classes or categories.[8]

The program presents a possible organization of data through statistical analyzes and mathematical, providing the number of classes, the existing relations between the same, the semantic context of each class, among others. Beyond this, Alceste segmenting the material responses from interviews of participants in large units called units of initial contexts (ICU) and in segments units called elementary contexts units (ECU).

In this study, the data treatment and analysis, by means of Descendant Hierarchical Classification, allowed the deductions on the organization of the social representations of dentistry students, on the ergonomic risk.

RESULTS AND DISCUSSION

As the analytical treatment of the Alceste software 4.8 which organized the data of greatest relevance resulting from the speeches of the dental students, by means of lexical analysis, emerged the social representations of ergonomic risk revealed in two semantic classes, namely: Class 1 - Knowledge on exposure to ergonomic risk ; Class 2 - Attitude of students in preventing and treating the injuries caused by repetitive efforts.

Class 1 - Knowledge on exposure to ergonomic risk

Ergonomic risks are physical and organizational elements that interfere in the comfort of the activity performed by the worker. The term coined for this risk type is Repetitive

Strain Injury - RSI (Resolution of the State Health Secretariat of Sao Paulo, paragraph 180 and 197 of 1992). Namely, they are injuries caused by repetitive motion, which is currently designated work-related musculoskeletal disorders WRMSDs.[9]

The dental professionals are constantly affected by this type of risk, because dental surgeons are victims of their own traditions, as they do not work with their hands and legs close to their body, their feet not supported fully on the ground. They do not work with the patient in according to the maxilla position - besides the repetitive mandible movements and lack of stretching of limbs causing the WRMSD, which will worsen over time. Let's look at the ECUs.

> *The ergonomic risk is great and they should know how to behave in a dental office to avoid further problems in the future such as RSI.*
>
> *It is important not to run ergonomic risk, following the rules to avoid future complications throughout a professional career.*
>
> *Maintain a correct posture to improve the quality of life of the dentist.*
>
> *Good conduct is up to the dental surgeon to, following the ergonomic and biosafety standards.*
>
> *All healthcare professionals have fear regarding to occupational risks. The biosafety becomes extremely necessary and still does not leave us one hundred percent assured. Moreover, in relation to ergonomics, that with the time, if one does not improve the way to position them self, they will certainty worsen.*

Dentistry, over time, has been transforming from an artisanal activity purely empirical and to a technical-scientific-humanistic profession. However, contemporary Dentistry is still faced with the increased incidence of infectious-contagious diseases of the most varied etiologies, and other complications postural, imposing the need to discuss and adopt mechanisms of protection, to prevent contamination of the professional and their team, and the patient; all those involved in this chain are equally exposed to this great variety of infectious agents.[10]

The study on musculoskeletal disorders in dental surgeons shows that the musculoskeletal disorders are linked to work in the area of dentistry and involves physical, cognitive and organizational aspects of the profession. To minimize or prevent its effect, changing habits at work is necessary, including the correct use of ergonomic equipment, resting between appointments and muscle strengthening through exercise, in addition to adopting healthy eating habits. Dentists must understand the mechanisms that contribute to the development of WRMSD, so that they can make informed choices and conscious in terms of ergonomic equipment, physical exercises and life style. This knowledge is fundamental for the adoption of basic injury prevention measures and management of work related musculoskeletal disorders in dentistry.[11]

Research on the knowledge and behaviors of teachers of a course in Dentistry has recommended that the surgeon-dentists must have knowledge on the ergonomic, biological, chemical and physical risks that exist in an environment of office and must acquire responsibility for adopting daily

prevention and precaution measures in their dental practice, and it should be initiated in college.[12]

This study identified health problems considered by Dental Surgeons (DSs) as arising from their profession showed that most DSs working in public health service has suffered needlestick accidents in the profession and has had or has some disease from professional practice. The most prevalent clinical complaint was muscle pain in the lumbar region (65%) followed by pain in the spine (10%). The DSs interviewed, even cited tendonitis (60%), the varicose veins (40 %) and presbyopia (40 %) as prevalent diseases caused by professional practice. [13]

Researchers have found that, Dentistry courses in general, offer theoretical knowledge necessary for understanding the control of infections, but not always the theory is related with the practice, and stressed the need for the deployment of a protocol of precautionary measures-standard applicable to the everyday life of the school and the professional life of its alumni. However, this reflects concern over the protection of students and professionals biological and chemical risks, without the need to highlight ergonomic risks, which was observed as the most important risk in the practice of dentistry students and professionals. [14]

Class 2 - Attitude of students in preventing and treating the injuries caused by repetitive efforts.

The repetitive strain injuries (RSI) and the work-related musculoskeletal disorders (WRMSD) cause absence from work for a large portion of workers.

In the following ECUs it is shown that dentistry students are concerned with the ergonomic risk since it affects a large number of dental surgeons and may result in complications that can result in absence from work.

> *Ergonomic risk is due to bad positions... It is very important to follow the rules to prevent future damage to our body. It is important to maintain a correct posture for better quality of life.*
>
> *In the workplace, everyone involved is at risk of injury to health it is up to dental surgeon to adopt good conduct, following the ergonomic and biosafety standards.*
>
> *Every professional has fear with respect to ergonomic risks, over time, if they do not improve their posture it will surely worsen.*
>
> *I am aware of the risks to which I am exposed in dental consultations*
>
> *To avoid ergonomic risk one should know how to act in a dental office to avoid further problems in the future, such as RSI.*

At work, when the employee feels the first signs of inability due to RSI/WRMSD and the possibility of disability, brings with it the recognition that their life is destabilized, and this is lined by situations of suffering in various planes of life. With this health care for of the workers regarded as invalid for work to be revised, with the adoption of a holistic care, so that consideration is given to the need to restore using more positive management strategies, with interventions involving dialogical bases and that strive for enhancement of the speech of participants suffering from RSI/WRMSD. These reflections seem quite relevant to the field of occupational health

since deposited on the question of the experience of disability other bases of understanding, which can be useful for the process from illness prevention to rehabilitation of the sick worker, and launch in this discussion, the need to reflect more deeply on this issue.[15]

Study on the facilitators and barriers to return to work for workers suffering from RSI/WRMSDs, show that the main personal factors that influence the return to work are related to physical health and to stage of RSI/WRMSD, age at time of return work and age of onset of the injury, as well as factors related to body perception, the perception of pain and the ability to cope with the pain, performing physical activities. Regarding the organizational factors, it stands out: the rhythm of work; exchange of function; modification of activities, less repetitive, with slower pace, less static; appropriate machinery and reduction in psychosocial risk factor.[16]

The selection of risk assessing methods for the RSI / WRMSD should always be made based on knowledge of work situations, i.e., in the ergonomic analysis of the work. Only in this way is it possible to ensure information on the workplace, their typology and especially on the risk factors present. Still allowing, among the many and various methods of assessing the risk existing and available in the literature, contribute to the selection of those whose application will risk ratings closer to the reality. Thus, the effectiveness of strategies for managing the risk of RSI / WRMSD will be guaranteed.[17]

The implementation of the rehabilitation program for workers with RSI/WRMSD has improved the interactions between employers and employees and has provided reflections on the actions until then developed by the various actors involved in the rehabilitation process. This can contribute to the discussion about the rehabilitation of workers in search of a workable model to be deployed in the institution with greater resolution than the traditional worker rehabilitation models.[18]

A survey was conducted with the objective to identify the body regions most affected by musculoskeletal symptoms among dentists. The positions adopted by dental surgeons involving twists of the vertebral column, abduction and lifting the arms, associated with the management of small vibrating instruments during prolonged periods can be the source of painful disorders and diseases of the musculoskeletal system. The results demonstrated that the painful symptoms were more frequently found in the region of the vertebral column and upper limbs, the neck being, lumbar region and shoulders respectively the locations of greater involvement. The researchers found that the clarification to dentists is necessary for them to adopt preventive measures to minimize the occurrence of these symptoms. [19]

Study on the Social Representations of Physiotherapists on RSI / WRMSD, respondents demonstrated difficulties in recognizing and dealing with the subjective aspects of RSI / WRMSD. Such conduct negatively affects resolvability of the treatments. Thus, the failure of some clinical interventions reinforces the assumption that patients with RSI / WRMSD are difficult, they do not improve, or they always return to treatment. The recognition of subjective aspects, which rarely coincide with the objective aspects of the disease, does not imply disregard to biological changes that may be present. Such changes should be treated with the objective of expanding the margins of safety and tolerance of the individual to the imposed health risks.[20]

Thus, the social representations that the dental students have to ergonomic risks are summarized in the relationship between a group and its culture based on individual history that

each one brings and, thus, a continuous process of construction and reconstruction, guide their conduct in the workplace.

CONCLUSION

In dentistry, there are physical, chemical, biological, ergonomic, and emotional accidents due to not taking preventive measures to minimize risks the occurrence of these risks. The importance of this study shows that from the research proposal of ergonomic risk, as a social phenomenon, by believing that in this perspective it will be possible to identify subjective aspects that certainly influence in the behaviors and attitudes of dental students.

Combating the ergonomic risks in dental offices is still a great challenge for the students and dental surgeons, because even with the use of measures for the prevention and control of its effects, it is necessary to change habits during work, including the correct use of ergonomic equipment.

Dental students represent the ergonomic risk as the most significance in the work environment to the detriment of biological and other risks and the importance of the use of PPE in the workplace and concern about infectious diseases such as AIDS and Hepatitis

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